

Appln. No. 10/708,127
Docket No. 141908/GEM-0096

REMARKS

Status of Claims

Claims 1-26 are pending in the application. Claims 1-26 stand rejected. Applicants have amended Claims 1, 2, 7, 10, 15, 20, 21, and 26, leaving claims 1-26 for consideration upon entry of the present Amendment.

Applicants respectfully submit that the rejections under 35 U.S.C. §112, second paragraph, and 35 U.S.C. §103(a), have been traversed, that no new matter has been entered, and that the application is in condition for allowance.

Rejections Under 35 U.S.C. §112, Second Paragraph

Claim 26 stands rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicants regard as the invention.

Applicants have amended Claim 26 to depend from Claim 24, thus establishing proper antecedent basis for "said analyzed image".

In view of the foregoing, Applicants respectfully submit that the claimed subject matter is described in such a manner that reasonably conveys to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention, and particularly pointed out and distinctly claimed the subject matter regarded as the invention. Accordingly, Applicants respectfully request the Examiner to reconsider and withdraw the rejection of Claim 26 under 35 U.S.C. §112, which Applicants consider to be traversed.

Rejections Under 35 U.S.C. §103(a)

Claims 1, 8-14, 21-24, 26 and 25 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Agano (U.S. Patent Publication No. 2002/0027201A1, hereinafter Agano).

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Claims 2-4, 7, 15-17 and 20, stand rejected under 35 U.S.C. §103(a) as being unpatentable over Agano as applied to Claims 1 and 10 above, and further in view of Stettner et al. (U.S. Patent No. 6,057,552 A2, hereinafter Stettner).

Claims 5 and 18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Agano and Stettner as applied to Claims 2 and 15 above, and further in view of Granfors et al. (U.S. Patent No. 5,751,783A, hereinafter Granfors).

Claims 6 and 19 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Agano and Stettner as applied to Claims 2 and 15 above, and further in view of Meuleman (U.S. Patent No. 3,742,215, hereinafter Meuleman).

Applicants traverse these rejections for the following reasons.

Applicants respectfully submit that the obviousness rejection based on the References is improper as the References fail to teach or suggest *each and every element of the instant invention in such a manner as to perform as the claimed invention performs*. To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). MPEP §2143.03.

Additionally, Applicants respectfully submit that obviousness cannot be supported by a proposed modification that would render the prior art invention being modified unsatisfactory for its intended purpose. *In re Gordon*, 221 USPQ 1125 (Fed. Cir. 1984); MPEP §2143.01.

Regarding Examiner's Paragraphs 5 and 6, and Independent Claims 1, 10 and 21

Applicants have amended Claims 1, 10 and 21 to include limitations originally found in Claim 2, and to now recite, inter alia,

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"...wherein one of said detectors is an energy integrating detector configured to provide a high resolution image giving a principal view of the exposed object in response to said x-rays, and the other of said detectors is an energy discriminating detector configured to distinguish the energy spectrum of said x-rays incident thereon and to provide additional characterization information to said high resolution image in response to the same said x-rays; and

wherein said first and second detectors are arranged to be used together in a one-shot exposure to said x-rays." (Claims 1 and 10);

"...producing in response to a signal from one of said detectors a high resolution image giving a principal view of the exposed object; and

distinguishing in response to a signal from the other of said detectors the energy spectrum of said x-rays incident thereon, thereby providing additional characterization information to the high resolution image;

wherein said producing in response to a signal from one of said detectors, and said distinguishing in response to a signal from the other of said detectors, are responsive to the same one-shot exposure to said x-rays." (Claim 21).

No new matter has been added by these amendments as antecedent support may be found in the specification as originally filed, such as at Paragraphs [0014], [0018], and [0028], for example.

Dependent claims inherit all of the limitations of the respective parent claim.

As amended, Applicants claim a hybrid x-ray detector and method of operation thereof that includes an energy integrating detector and an energy discriminating detector usable together when exposed to a one-shot exposure of x-rays. The signals from the two detectors being producible of a high resolution image with additional characterization information. Limitations included in the amendments to Claims 1, 10 and 21, find their origin in Claim 2.

In view of Agano by itself not being applied to reject Claim 2, Applicant submits that the rejections under Examiner's Paragraph 5 have been traversed. Accordingly,

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Applicants following remarks are primarily directed to Examiner's Paragraph 6, which modifies Agano in view of Stettner in order to reject Claim 2, among other claims.

In first comparing Agano to the claimed invention, Applicant finds Agano to merely disclose a radiation detector having two detection layers configured to prevent image quality degradation at the periphery of the image after subtraction processing (see Abstract, paragraph [0018], [0028] and [0049]). Further, Applicant finds Agano's disclosure to remedy the image quality degradation (at the periphery) by performing a magnification size correction operation with no mention of improved image quality at locations other than the periphery of the image and no teaching of analyzing the energy spectrum of the x-rays as in the claimed invention. Thus Agano fails to teach or suggest a first detector and a second detector "wherein one of said detectors is an energy integrating detector configured to provide a high resolution image giving a principal view of the exposed object in response to said x-rays, and the other of said detectors is an energy discriminating detector configured to distinguish the energy spectrum of said x-rays incident thereon and to provide additional characterization information to said high resolution image in response to the same said x-rays; and wherein said first and second detectors are arranged to be used together in a one-shot exposure to said x-rays", as claimed in amended Claims 1 and 10.

Under a similar comparison, Applicants find Agano to be deficient in its teaching or suggestion of "producing in response to a signal from one of said detectors a high resolution image giving a principal view of the exposed object; and distinguishing in response to a signal from the other of said detectors the energy spectrum of said x-rays incident thereon, thereby providing additional characterization information to the high resolution image; wherein said producing in response to a signal from one of said detectors, and said distinguishing in response to a signal from the other of said detectors, are responsive to the same one-shot exposure to said x-rays", as claimed in Claim 21.

Under Examiner's Paragraph 6, the Examiner acknowledges that Agano does not disclose, teach or suggest an energy discriminating detector, and looks to Stettner to cure this deficiency. Paper 20060113, page 5.

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Here, the Examiner alleges that Stettner "teaches that an integrating detector may be made an energy discriminating detector *through adjustment of* the radiation flux and integration time (col. 9, lines 32-40)." Emphasis added.

As alleged, Applicants understand the Examiner to be modifying Agano in view of Stettner in such a way that would result in one of the Agano integrating detectors being made into an energy discriminating detector *through adjustment of* the radiation flux and integration time seen by the combination of detectors.

If Applicants were to accept the Examiner's modification of Agano in view of Stettner, then it necessarily follows that one of the Agano integrating detectors would need to undergo *an adjustment of* the radiation flux and integration time in order to function as an energy discriminating detector, which in turn would require a *first exposure* to x-rays to provide the function of an energy integrating detector, and then a *second exposure* to x-rays to provide the function of an energy discriminating detector, since the function of the energy discriminating detector can only be accomplished via Stettner *through adjustment of* the radiation flux and integration time, thereby resulting in a two-shot x-ray exposure process.

In comparing Agano as allegedly modified by Stettner, Applicants not only find the combination to be absent the claimed limitation of "wherein said first and second detectors are arranged to be used together in a one-shot exposure to said x-rays", but also finds the modified Agano to be unsatisfactory for its intended purpose.

As disclosed at paragraphs [0030] and [0034], Agano teaches a detector assembly 20 having first and second layers 21 and 22 that are configured for energy subtraction processing using a one-shot method. If Agano were to be modified by Stettner as alleged by the Examiner, Agano would no longer be configured for energy subtraction processing using a one-shot method. Accordingly, one skilled in the art would not be motivated to modify Agano in view of Stettner to arrive at the claimed invention where the modification would render Agano unsuitable for its intended purpose.

Accordingly, Applicant submits that Agano is deficient in teaching or suggesting each and every element arranged to perform as the claimed invention performs, that

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Stettner fails to cure this deficiency, and that a modification of Agano in view of Stettner would not only still result in a missing element of the claimed invention, but would also render the prior art being modified unsuitable for its intended purpose.

In view of the foregoing, Applicants submit that Claims 1, 10, and 21 are allowable, and that claims dependent therefrom are also allowable for at least the reasons given above for independent Claims 1, 10, and 21.

Regarding Examiner's Paragraphs 7 and 8

In view of Claims 5, 6, 18 and 19 being dependent from either Claim 1 or 10, and in view of Granfors and Meuleman not being applied to reject elements of Claim 2, now incorporated into amended Claims 1 and 10, Applicants submit that Granfors and Meulaman fail to cure the deficiencies of Agano and Stettner, and for at least these reasons are allowable. Accordingly, Applicants respectfully request reconsideration and allowance of Claims 5, 6, 18 and 19.

In view of the foregoing, Applicants submit that the References fail to teach or suggest each and every element of the claimed invention and are therefore wholly inadequate in their teaching of the claimed invention as a whole, fail to motivate one skilled in the art to do what Applicants have done, fail to recognize a problem recognized and solved only by the present invention, fail to offer any reasonable expectation of success in combining the References to perform as the claimed invention performs, fail to teach a modification to prior art that does not render the prior art being modified unsatisfactory for its intended purpose, and discloses a substantially different invention from the claimed invention, and therefore cannot properly be used to establish a prima facie case of obviousness. Accordingly, Applicants respectfully request reconsideration and withdrawal of all rejections under 35 U.S.C. §103(a), which Applicants consider to be traversed.

In light of the foregoing, Applicants respectfully submit that the Examiner's rejections under 35 U.S.C. §112, second paragraph, and 35 U.S.C. §103(a), have been

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traversed, and respectfully request that the Examiner reconsider and withdraw these rejections.

The Commissioner is hereby authorized to charge any additional fees that may be required for this amendment, or credit any overpayment, to Deposit Account No. 07-0845.

In the event that an extension of time is required, or may be required in addition to that requested in a petition for extension of time, the Commissioner is requested to grant a petition for that extension of time that is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to the above-identified Deposit Account.

Respectfully submitted,

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